The
VETERINARY RECORD
Founded by William Hunting, F.R.C.V.S., in 1888

7, MANSFIELD STREET, PORTLAND PLACE, LONDON, W.1. MUSEUM 6541

No. 11 MARCH 12th, 1955 Vol. 67

Registered for Transmission as a Newspaper *Price: 2s. post free*

Contents

General Articles :

Observations on the Parasitology of Deep Litter in Poultry Houses 193
S. F. M. Davies, B.A., M.R.C.V.S.
L. P. Joyner, PH.D., B.SC.

Artificially Induced Lactation in Sheep 200
E. A. McPherson, M.R.C.V.S.

Leech Infestation of the Eye in Geese 203
H. E. Roberts, B.SC., M.R.C.V.S.

Veterinary Pharmaceutics ... 202

The American College of Veterinary Pathologists 205

The Register of Veterinary Surgeons 208

Current Literature :

Abstracts 206

Book Reviews 207

News and Comment 209

Correspondence :

Myxomatosis 211
F. B. Edwards, M.R.C.V.S.

The Scheme for Animal Nurses 211
P. K. van Stellingwerff, B.V.SC.
William Trigger, F.R.C.V.S.

Candidates for Election to Council, R.C.V.S. 212
A. J. Beeson, M.R.C.V.S.

Observations on the Parasitology of Deep Litter* in Poultry Houses

BY

S. F. M. DAVIES and L. P. JOYNER
Ministry of Agriculture Veterinary Laboratory
Weybridge, Surrey

Introduction

THE system of maintaining poultry on deep litter has been favoured by poultry keepers in America and more recently in this country, mainly because of economy in management. An additional advantage has been pointed out by Kennard & Chamberlin (1948) and Kennard, Bethke & Chamberlin (1948) who have demonstrated that floor litter may serve as a source of dietary factors essential for the growth of chickens and the hatchability of eggs. The system, however, appears to be contrary to accepted principles of hygiene because numbers of birds are confined in a relatively small area for long periods in close contact with accumulated droppings. Koutz (1948) showed that coccidial oocysts could survive in deep litter, and Tomhave (1949) described the incidence of coccidiosis among chicks reared on sawdust litter and reported a greater mortality from coccidiosis among birds on litter of which the initial moisture content was high. Koutz (1952) recorded the presence in deep litter of helminth ova as well as coccidial oocysts and observed a higher incidence of parasites in birds kept in litter pens than in similar birds kept in batteries. It is evident that while deep litter has some advantages over other systems of management, it may under certain circumstances expose the birds to higher parasitic infestation.

Very little attention has been devoted, in Great Britain, to the systematic study of deep litter, although a series of observations on the conditions in litter in one deep-litter house has recently been reported by Horton-Smith & Long (1954). At Weybridge, as part of a programme of investigation of the possible dangers of outbreaks of parasitism among birds on deep litter, it was decided to observe the existing litter conditions in a number of established units. We have thus attempted to observe the physical conditions of the litter, *i.e.*, moisture content, *p*H, titratable alkali and

* The term "Deep Litter" is used here to describe the system in which fermentation is established and no further additions are being made. It is also described in the literature as "built-up litter" where it has originated by the gradual addition of fresh litter, and in some American publications as "compost litter."

total ammonia content, and to correlate these data with the numbers of ova of common poultry helminths and of coccidial oocysts present in the litter.

Material Included in the Survey

During the period from November, 1952 to June, 1953, visits were made to 12 different deep litter units in Surrey and Hampshire where various types of buildings and litter were used as follows:—

1. Wooden building with earth floor—sawdust and loam.
2. Wooden building with wooden floor—chopped straw and chaff.
3. Wooden building with concrete floor—sawdust.
4. Brick building with concrete floor—peat moss and chaff.
5. Upstairs loft—wood chips.
6. Thatched barn with earth floor—wood shavings and sawdust.
7. Converted pigsties with concrete floor—sawdust.
8. Converted cow byre with concrete floor—sawdust.
9. Converted greenhouse with earth floor—straw and sawdust.
10. Modern deep litter house—woodshavings.
11. Converted army hut with concrete floor—woodshavings and sawdust.
12. Lean-to building with earth floor—straw.

Six of these units were then selected as being suitable for a study of the seasonal changes which were likely to occur in the litter. Observations at these units were continued during 1953-54.

Management

The management of individual litter units followed the same general pattern. The birds were confined within the building without access to pens or straw yard. Perches were usually moved at intervals and droppings did not visibly accumulate but were quickly absorbed into the litter. In two cases droppings pits were provided.

Drinking appliances were usually installed along a wall. The most popular types consisted of (1) a length of angle iron along which a continuous flow of water was maintained; (2) open troughs provided with a ball valve; (3) the common fountain type with a reservoir.

The number of birds varied between 60 and 1,200 with an average floor space per bird of 3.7 square feet.

With the exception of three units, which had been in use for one season, the litter had been laid down during the previous summer. Additions of lime were commonly made, particularly during the winter months. In every case the litter was turned by hand at intervals of one to four weeks. The depth of the litter varied from 3 to 10 inches with an average of six inches.

Collection of Samples

Wide variations in the consistency of the litter were often apparent and in each unit several samples of litter were necessary for an adequate assay. Notes were also made of any individual characteristics, *i.e.*, the situation of the house, the types of windows and ventilators, the position and efficiency of drinking appliances, the surface condition of the litter in areas near and beneath the perches, food troughs and nesting boxes. The appearance of the deeper layers was also noted. Samples were then taken at selected sites from both surface and deep layers and the litter temperatures at these sites were recorded. A bulk sample was collected to assess the fermentation potential of the litter. The samples were examined for parasites without delay, but those intended for chemical determinations were kept in sealed glass containers at −10° C. pending examination.

Laboratory Methods

1. The moisture contents were determined by drying weighed quantities of approximately two grammes in an oven at 100° C. for 48 hours.

2. The *p*H, titratable alkali and ammonia determinations were carried out on aqueous extracts of the litter. Approximately four grammes of litter were extracted at room temperature for 30 minutes with 20 ml. distilled water. The extracts were strained through washed muslin and centrifuged. Five ml. of the supernatant fluid were used for the *p*H determination using a glass electrode. To obtain the titratable alkali value the reaction was adjusted to neutrality with a measured volume of centinormal hydrochloric acid.

3. The total ammonia content was estimated in the conventional van Slyke aeration apparatus (Cole, 1933). Five ml. of the supernatant fluid were placed in the aeration tube, approximately three grammes of anhydrous potassium carbonate were added and a stream of air was passed through the apparatus for four to five hours. The ammonia was trapped in 2 per cent. boric acid to which brom-cresol-green methyl red mixed indicator had been added (Sobel *et al.* 1945). The back titration was carried out using centinormal hydrochloric acid, and the volume used was expressed as equivalent milligrammes of ammonia per 100 g. of litter. In every case the final results of the determinations were calculated in terms of wet litter, no correction being made for the moisture content.

4. For the estimation of parasite content three gramme samples of litter were macerated in 42 ml. tap water for three hours and then shaken and strained through muslin. Two equal portions of the resulting filtrate were centrifuged at 1,500 r.p.m. for three minutes and after discarding the supernatant liquid, the sediment from one portion was examined for the presence of oocysts, ova, mites, and mite eggs, by a flotation method, using saturated sodium chloride solution. The supernatant liquid from the other portion was then poured off and the sediment was resuspended in a similar volume of

saturated salt solution. The numbers of oocysts and ova in a sample of this suspension were counted with the aid of a McMaster slide.

The Species of Parasites

Coccidial oocysts identified were those of *Eimeria acervulina, E. tenella, E. maxima,* and *E. mitis.* The helminth ova included those of *Heterakis gallinae, Ascaridia galli* and *Capillaria* spp. Care had to be taken to distinguish these parasite ova from those of free-living nematodes which were numerous, particularly where the moisture content of the litter was high.

In this series of samples no evidence of Red Mite infestation was found although with few exceptions the litter contained large numbers of forage mites and their eggs.

The Relationship Between the Physical Conditions of the Litter and the Presence of Parasites

1. *Moisture Content.* The moisture content varied between the wide limits of 10.2 per cent. and 68.6 per cent. Although parasites were always present the greatest numbers of ova and oocysts occurred where the moisture content was highest and invariably the wettest surface litter was found near badly designed drinking appliances. Examples where increased numbers of parasites occurred near such drinkers are given in Table I.

Where long straw was used as the basis for the litter a compressed mat was formed in the deep layers where the moisture content was higher than at the surface. In these cases also, high moisture contents were accompanied by increased numbers of parasites as shown in Table II.

2. *Ammonia Content.* Free ammonia is known to have a marked effect upon the survival of coccidial oocysts (Horton-Smith, Taylor & Turtle, 1940) but no suitable direct method of estimating free ammonia in deep litter is yet available. Therefore, in addition to total ammonia content, estimations were made of titratable alkali and *p*H. Increases in titratable alkali and *p*H are indicative of increases in free ammonia although a quantitative estimate is not possible.

TABLE I
THE PARASITE CONTENT AND MOISTURE CONTENT OF LITTER NEAR DRINKERS

Source of Litter	Moisture content per cent.	*p*H.	Heterakis ova per gramme	Ascaridia ova per gramme	Capillaria ova per gramme	Coccidia: Total oocysts per gramme	Coccidia: Per cent sporulated
Unit A							
Surface samples :							
Centre of House	13·8	7·5	+	Negative	Negative	+	—
Near Drinker	68·6	8·2	200	275	150	825	39
Unit B							
Surface samples :							
Centre of House	28·3	8·3	+	Negative	Negative	1,700	Not determined
Near Drinker	42·1	8·25	175	50	+	6,800	,, ,,
Unit C							
Surface samples :							
Centre of House	36·8	8·2	Negative	Negative	+	4,200	37
Near Drinker	52·3	8·8	500	,,	+	24,200	75
Unit D							
Surface samples :							
Centre of House	26·6	8·9	+	Negative	+	150	66
Near Drinker	50·0	8·8	100	150	200	750	30

+ = Parasites detectable by flotation.

TABLE II
THE CONDITION AND PARASITE CONTENT AT THE SURFACE AND IN THE DEPTH OF STRAW LITTER

Sample	Moisture Content per cent.	*p*H	Titratable Alkali ml. of 0·01 N HCl/g.	Total Ammonia mg/100g.	Heterakis ova per g.	Ascaridia ova per g.	Capillaria ova per g.	Coccidial Oocysts: Total	Coccidial Oocysts: percentage sporulation
Unit E.									
Surface	29·3	8·7	3·99	209·8	150	100	50	7,350	41
Deep	50·5	8·7	4·28	142·9	400	100	+	13,000	75
Unit F.									
Surface	12·6	8·1	1·28	125·2	+	+	Nil	250	40
Deep	44·8	8·2	2·96	155·8	200	150	+	1,050	72
Unit G.									
Surface	13·8	7·8	0·68	100	50	100	+	3,600	58
Deep	56·7	8·4	2·83	237·5	400	700	100	23,700	60

TABLE III
THE VARIATION OF THE NUMBERS OF COCCIDIAL OOCYSTS AND *Ascaridia galli* OVA IN LITTER WITH *p*H, TITRATABLE ALKALI AND TOTAL AMMONIA

Number of samples	*p*H range	Titratable alkali ml. of 0·01 N HCl per gramme		Total Ammonia mg. per 100 g. litter		Number of samples grouped according to oocyst content				Number of samples grouped according to ova content		
						Coccidial oocysts per gramme				*Ascaridia galli* ova per gramme		
						A 0–50	B 50–500	C 500–5000	D 5000	E 0–50	F 50–250	G 250–500
		Mean	Range	Mean	Range							
6	6·8 to 7·3	0·10	0· to 0·32	112·33	20·6 to 212·2	1	4	–	1	4	2	–
11	7·4 to 7·9	0·74	0·21 to 2·0	129·33	54·9 to 230·9	2	5	4	–	5	5	1
19	8·0 to 8·5	1·90	0·78 to 4·70	135·79	24·3 to 237·5	6	7	4	2	15	3	1
13	8·6 to 9·1	3·95	1·72 to 6·22	173·67	108·0 to 244·7	3	4	3	3	9	3	1

Table III shows the variation in the numbers of coccidial oocysts and ova of *Ascaridia galli* with *p*H, titratable alkali and total ammonia. It is evident that in the units studied ammonia did not reduce the numbers of parasites.

3. *Seasonal Changes in the Litter.* The observations thus far indicated the importance of moisture in controlling the parasite content of the litter. During the winter months, low temperature and high relative humidity of the atmosphere would be expected to result in increases in moisture content of the litter. An attempt was therefore made to observe this seasonal variation and its effect upon the numbers of coccidial oocysts present in the litter by collecting samples from fixed sites in five deep-litter houses at intervals during the year 1953-54. The oocyst and moisture contents of the samples recorded in Fig. 1 were collected from sites near the drinkers, while in Fig. 2 the results obtained from surface samples in central positions in the litter houses are recorded.

It is evident that the increase in litter moisture which occurred during the winter months was accompanied by a definite increase in the oocyst population; conditions being at their worst from November to February, followed in most of the units by a reduction in the moisture-content and numbers of parasites during the spring. It will be noted that on the open surface of the litter, the improvement began during February, but in the vicinity of the drinkers the reduction in moisture content was deferred until April.

4. *Temperature.* During the fermentation processes taking place in the litter heat is evolved. This usually results in the deeper layers being at a higher temperature than the surface. The greatest difference in temperature that was recorded was 13° C., the surface temperature being 20° C., while at a depth of five inches the temperature was 33° C. No significant reduction in the number of oocysts and ova as a result of this heating could be detected and the data presented in Table II shows that in some cases the numbers of parasites were even higher in the deeper layers, especially where moisture was accumulating.

Schwartz, Price & McIntosh (1931) showed that livestock parasites in manure could be killed by means of the heat generated when horse or cow dung was stored in insulated boxes. In deep litter units efforts are made to sterilise the litter before the introduction of a new batch of birds by drawing it into large heaps, in the centre of which considerable increases of temperature take place. In order to assess the ability of litter to evolve heat in this way, a simple test was designed in which a sample of the freshly collected litter was thermally isolated

FIGS. 1 & 2.—The moisture contents and oocyst populations in samples of litter. The corresponding lines in the two graphs represent the moisture content and oocyst numbers from one deep-litter house.

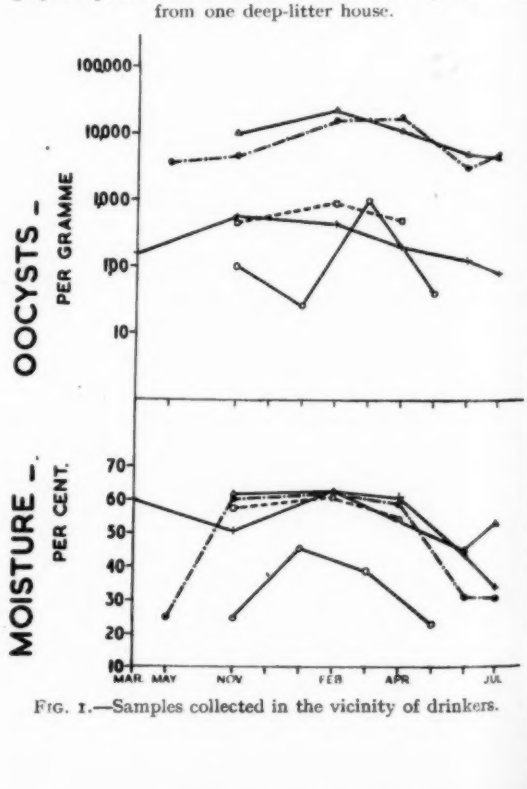

FIG. 1.—Samples collected in the vicinity of drinkers.

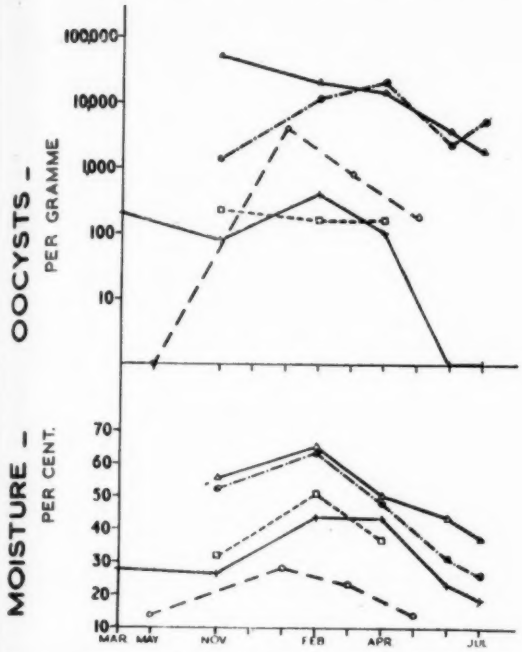

FIG. 2.—Samples collected in central positions in the litter houses.

in a quart vacuum flask of the standard wide-mouthed type. The litter was gently packed into the flask and a layer of cotton wool placed across the mouth. Temperatures were measured by means of a mercury thermometer with the bulb at the centre of the mass of litter.

Most of the samples tested in this way showed temperature reactions similar to that recorded in Fig. 3 (A) but occasionally no appreciable temperature rise could be detected. The result given by such a sample of litter is recorded in Fig 3 (B).

Moisture appeared to play an important part in the process of heat evolution, since it was noticed that where the moisture content of the litter was low—approximately 20 to 25 per cent.—the litter often failed to show a temperature rise. Such litter could be induced to ferment by the addition of water.

By feeding washings of litter to isolated normal chicks, viable oocysts could be demonstrated even after a rise in temperature similar to that shown in Fig. 3(A) had occurred. The survival of oocysts was probably due to uneven heating in the flask, where it was observed that the highest temperatures were reached only in the centre of the mass of litter. Nevertheless, the oocyst counts and the intensity of the resulting infections showed that many oocysts were destroyed.

Discussion

Active deep litter is a very complex system and its operation depends upon the interaction of a series of variable factors. atmospheric humidity, ventilation, temperature, the material used for the litter, the numbers of birds present, and the activity of organic decomposition all play an important part.

Humidity, ammonia and temperature were chosen because they are known to affect the development and survival of parasites.

The greatest variations were observed in the values obtained for moisture content. Lower moisture contents were found to be accompanied by fewer helminth ova and oocysts. It has been shown in Table I that a common source of excess moisture was defective drinkers. Condensation on the roof was another source of moisture. There is need for more attention to these problems by those in charge of deep litter units.

Humidity has been shown by Ellis (1938) to influence the development of oocysts, and McRae (1935) has shown that at 22° C. a relative humidity of 82 to 86 per cent. is necessary for the complete development of the eggs of *Ascaridia galli*. In measuring the total moisture content of the litter we have only indirectly assessed the humidity of the micro-climate to which the oocysts and ova are exposed in the litter. A direct method of estimating humidity in deep litter has not yet been established but it is possible that new methods of measurement may be applicable to this field.

A similar problem arises in the measurement of free ammonia. Undissociated ammonium compounds are in equilibrium in solution with ammonium ions and these in turn are in equilibrium with free ammonia. The ammonium ion/free ammonia system is of course influenced by *p*H such that most ammonia is present when the *p*H is high. Any method of estimation which involves withdrawing ammonia disturbs the equilibrium and a false result for free ammonia may be obtained. The quantities which we have estimated do, however, indirectly indicate variations in free ammonia content which will be high wherever *p*H and titratable alkali are high.

A further complication is the practice of adding lime to the litter, the addition of another base influencing the *p*H and titratable alkali. The concentration of free ammonia is then increased and ammonia gas is evolved which accounts for the strong smell of ammonia commonly noticeable in deep-litter houses immediately after liming. Not all the alkaline material is ammonia, but, nevertheless, the concentration of free ammonia is increased when *p*H is high.

Our observations indicate that the effect of free ammonia on the numbers of parasites present in the litter is less than that of low moisture content. It will be seen from Table I and Table II that large numbers of parasites can occur where *p*H is high, provided that sufficient moisture is present.

There is an important relationship between moisture content and temperature, as noted above, and in this respect there is a close similarity between the fermentation of deep litter and that occurring in compost heaps, where changes are brought about by a combination of chemical, bacterial and fungal

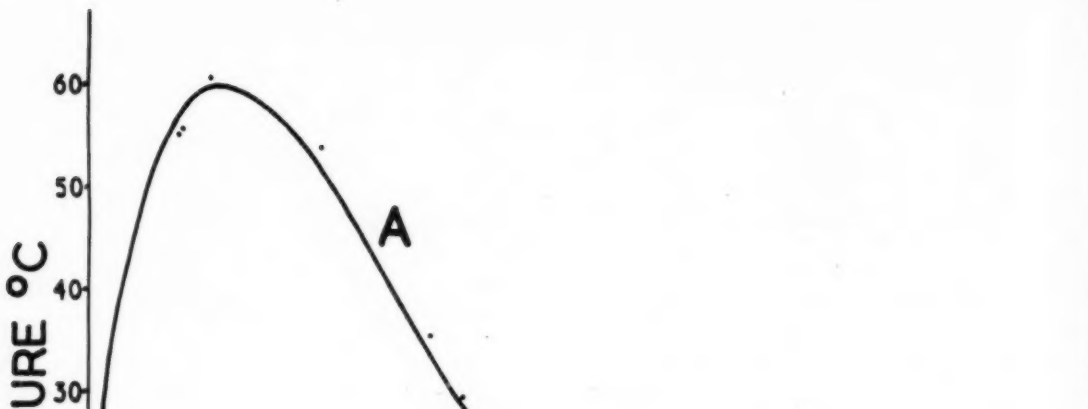

FIG. 3.—Heat production by two samples of litter.
(*a*) Moisture content, 44·0 per cent. (*b*) Moisture content, 24·2 per cent.

action (Jenkins, 1935). The ability of litter to evolve heat is of great significance because the temperature gradient thus established between the litter and the external air space is an important factor in keeping the litter dry. The temperature rises can be accentuated by heaping the litter and temperatures much above those which have been recorded in open pens are reached. This is a satisfactory way of reducing the numbers of parasites in the litter before the introduction of a fresh batch of birds, but Horton-Smith & Long (1954) stated that when temperatures of 120° F. (52° C.) or over are reached it must be allowed to act upon the organisms for at least one day. The tests in vacuum flasks described above show that very dry litter is incapable of reacting in this way, and with particularly dry litter where satisfactory temperature rises cannot be obtained, the addition of a small quantity of water before heaping would be appropriate.

The heat produced in the deeper layers of open pens, however, may actually favour the sporulation of oocysts and the embryonation of worm eggs since Ellis (1938) has shown that optimum sporulation of oocysts of *Eimeria tenella* occurred at temperatures between 26° C. and 32° C. and Roberts (1936) recorded the optimum temperature range for the development of *Ascaridia* eggs as 30° to 33° C. Similarly 20° to 30° C. was found by Clapham (1933) to be a favourable range of temperatures for the development of the eggs of *Heterakis gallinae*. One effect of the heat is to drive off moisture from the litter, this process would continue in the absence of further additions of moisture until the litter became dry when heat evolution would cease. We have noted that the addition of water to this dry litter induces further heat production and the moisture is again driven off. Fermentation commences when sufficient moisture has entered the litter to activate it. The droppings, wastage from drinkers, seepage from badly drained floors, atmospheric humidity and condensation all contribute moisture, while the heat of fermentation and ventilation remove it. High moisture contents appear to be due to excessive amounts of water entering the litter with which the fermentation processes and ventilation are unable to deal and it is during the winter months that any tendency to dampness will be accentuated.

Conclusions

These observations suggest that dryness is the only lethal factor of importance in reducing the number of parasites in deep litter. Oocysts and ova remained viable at the temperatures likely to be recorded in the litter and in the presence of the

ammonia. The only way in which fermentation works beneficially is by producing the heat that dries the litter and it will dry it to a point that is inimical to parasites and maintain it so, provided the rate of addition of moisture is not too great and ventilation is adequate.

Summary

1. The numbers of parasites, moisture content, *p*H, titratable alkali and total ammonia in samples taken from 12 different deep-litter units have been determined.

2. Larger numbers of parasite ova and oocysts are present when the moisture content of the litter is high. Inefficient drinking appliances and the use of long straw were the commonest causes of accumulations of excess moisture.

3. Free ammonia can be assessed only indirectly, but the evidence so far available indicates that it is of minor importance in limiting the numbers of parasites.

4. A seasonal variation in the litter moisture content and in the coccidial oocyst population is recorded. Large numbers of oocysts were present when moisture contents were highest during the winter months from November to February.

5. Temperatures attained in the depth of the litter in open pens are not sufficient to eliminate oocysts and ova and may even favour their development.

6. When samples of active litter containing viable oocysts were packed into a vacuum flask the numbers of oocysts were significantly reduced by the heat generated within the litter. Temperature curves obtained under these conditions from two types of litter have been recorded.

Acknowledgments.—We should like to express our thanks for technical help from Misses A. Downham and P. Hewer, and from Mr. P. S. Wardell.

Thanks are also due to our colleagues, Mr. J. D. Blaxland of this Laboratory and Mr. E. C. Morris of the Field Staff of the Animal Health Division of the Ministry of Agriculture and Fisheries, and to the owners of deep litter units whose willing co-operation made this work possible.

References

CLAPHAM, P. (1933). *J. Helminth.* **11.** 76.
COLE, S. W. (1933). "Practical Physiological Chemistry," Cambridge.
ELLIS, C. C. (1938). *Cornell Vet.* **28.** 267.
HORTON-SMITH, C., TAYLOR, E. L., & TURTLE, E. E. (1940). *Vet. Rec.* **52.** 829.
———, & LONG, P. L. (1954). *Proc. Xth World's Poult. Cong. Edinburgh Sect. C.*, 266.
JENKINS, S. H. (1935). Imperial Bureau of Soil Science Tech. Com. No. 33.
KENNARD, D. C., BETHKE, R. M., & CHAMBERLIN, V. D. (1948). *Poult. Sci.* **27.** 477.
———, & CHAMBERLIN, V. D. (1948). *Ibid.* **27.** 240.
KOUTZ, F. R. (1948). *Ibid.* **27.** 793.
———. (1952). *Ibid.* **31.** 123.
MCRAE, A. (1935). *J. Parasit.* **21.** 220.
ROBERTS, F. H. S. (1936). *Qd. Agric. J.* **46.** 38.
SCHWARTZ, B., PRICE, E. W., & MCINTOSH, A. (1931). *U.S. Dep. Agric. Yearbook 1931*, p. 353.
SOBEL, A., HIRSCHMAN, A., & BESMAN, L. (1945). *J. biol. Chem.* **161.** 99.
TOMHAVE, A. E. (1949). *Ann. N.Y. Acad. Sci.* **52.** (4) 460.

AILMENTS OF BIRDS, RABBITS, GOLDFISH, ETC.

There appears to be an increasing demand for veterinary assistance in dealing with the ailments of less usual domestic pets such as birds, rabbits, goldfish, etc. It would be helpful if readers who are interested, or who have specialised knowledge, would kindly notify the General Secretary, British Veterinary Association, 7, Mansfield Street, Portland Place, London, W.1, and at the same time state whether they would be prepared to give advice on specific problems to veterinary surgeons who may require their assistance.

A list of names will then be kept at B.V.A. headquarters, and those wishing for advice are invited to apply to the Association.

A.R.C. VETERINARY RESEARCH FELLOWSHIPS

The Agricultural Research Council is offering two Fellowships to provide opportunities for suitably qualified veterinarians to undertake research. The Fellowships will be tenable for a maximum of three years and will carry a stipend of £850 a year, plus superannuation. Candidates must be British subjects and hold a registrable veterinary qualification, and should have been engaged in research for not less than three years since qualifying.

The Council is also continuing to offer postgraduate Research Studentships and Training Grants to holders of veterinary qualifications, and a small number of Veterinary Training Grants to enable honours graduates in one of the basic sciences to read for a veterinary qualification after taking their science degree. Applications for these awards should reach the Council by March 31st.

Further details of the above awards, together with information about openings in agricultural research and advisory work, are obtainable from the Secretary, Agricultural Research Council, Cunard Building, 15, Regent Street, London, S.W.1.

FOX CONTROL

In reply to a question in the House of Commons the Minister of Agriculture said that, although he had as yet no evidence that attacks by foxes had appreciably increased following outbreaks of myxomatosis, farmers would be well advised to redouble their efforts to protect their stock.

There is concern, particularly in hill country where ewes are reported to have wintered badly, about the danger from foxes during the lambing season, and in reply to another question the Minister announced that, after consulting the interests concerned, he proposed to increase the Ministry's share of the bonuses paid by fox destruction societies from 7s. 6d. to 10s. for an adult fox and from 2s. 6d. to 5s. for a cub, provided the societies contributed similar amounts.

Artificially Induced Lactation in Sheep

BY

E. A. McPHERSON

Department of Veterinary Medicine, Royal (Dick) School of Veterinary Studies, Edinburgh University

IT would prove a great asset on hill sheep farms if lactation could be artificially induced in barren ewes so that they could suckle lambs. Artificially induced lactation in sheep, whilst recorded (Peeters & Massart, 1947 and Underwood *et al.*, 1953), has received much less attention than in cattle or goats. The mechanism controlling the initiation and maintenance of lactation has been reviewed by Meites & Turner (1948) and, whilst the yield of milk during an artificially induced lactation is unpredictable (Folley *et al.*, 1944, and Hammond & Day, 1944), the majority of animals so treated produce sufficient milk to rear the young of their species. The hormone most widely and successfully used for this purpose is stilboestrol. On groups of sheep, three methods of administration of this drug have been studied. Stilboestrol was implanted in tablet form and injected in oily solution in (a) repeated small doses and (b) a single large dose.

Experimental

A group of Half Bred (Border Leicester x Cheviot) females, three gimmers and three ewes, weighing approximately 200 lb., were used. Three animals received pure stilboestrol* in 15 mg. tablets and the others daily injections, intramuscularly, of diethylstilboestrol dipropionate in oily solution†. The data of this experiment are tabulated in Tables I and II.

The udders of all six sheep were massaged and the teats, after lubrication with vaseline, were drawn twice daily from the 48th hour after first dosage until a milk flow was established. By the fifth day all the sheep were showing definite enlargement of the mammary glands. Two sheep (B and C) were given 5 mg. stilboestrol dipropionate intramuscularly on the fifth day to hasten the onset of lactation. As soon as milk flowed a young lamb of less than one week was presented to the ewes. At first, although the lambs were assisted to the teats, it was very difficult to get them to suckle. These lambs were too young to do without bottle feeding as the ewes at the outset had very little milk, but after two to three days, more milk was present and bottle feeding was drastically reduced. About a week after the establishment of a good flow of milk, *i.e.*, about 15 days from the first injection, the foster mothers had taken charge of their lambs and they were turned out on to the hill grazing.

* Implantin—Burroughs Wellcome & Co.
† Stilboestrol dipropionate, May & Baker.

TABLE I

GROUP I.

Sheep	Stilboestrol Treatment Initial dose	2nd day	4th day	5th day	8th day	10th day
Sheep A	105 mg. by implantation	Udder enlarged. Some secretion at teats	Udder enlarged. Secreting milk	Milk secretion increased. Lamb suckled	Good milk flow. Lamb suckled	Milk flow continued. Lamb suckling
Sheep B	Ditto	Udder enlarged. No secretion	Udder enlarged. No secretion	Udder enlarged. Early secretion. 5 mg. Stilboestrol dipropionate given	Ditto	Ditto
Gimmer C	120 mg. by implantation	No change in udder	Slight udder enlargement	Udder enlarged. 5 mg. Stilboestrol given	Milk secretion. Lamb suckled	Good milk flow. Lamb suckled

TABLE II

GROUP II.

Sheep	Daily dose of Stilboestrol Dipropionate	2nd day	4th day	5th day	8th day	10th day
Ewe D	4 mg. intramuscularly for 15 days	No change	Udder enlarged. Watery milk secretion	Milk secretion increased. Lamb suckled	Good milk flow. Lamb suckled	Milk flow continued. Lambs suckling
Gimmer E	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto
Gimmer F	Ditto	Ditto	No change in udder	Slight udder enlargement	Udder enlarged	Creamy secretion at teats

TABLE III

GROUP III.

Ewes	Stilboestrol Dipropionate	1st day	2nd day	3rd day	7th day	6 weeks later
8 B.F. ewes	Single dose of 40 mg. given subcutaneously	Little change	Udders enlarged in all and some secretion at teats of most	Udder secreting milk in most cases. Soon as milk present each ewe given a lamb	Lambs doing well and ewes had twice as much milk as required	Rearing good lambs. Good milk flow still present
4 B.F. ewes	Ditto	Ditto	Ditto	Milk present in udders of most	Milk present in udders of all. No lambs available so ewes turned out to hill.	Udders still enlarged. Milk still present. No evidence of mastitis

Sheep A, B, C, D & E (Tables I and II) each reared a first-class lamb. The gimmer F, however, could not be induced to allow the lamb to suckle and she was turned out on to the hill and not seen for some three months, by which time her udder had undergone involution and was returning to its normal quiescent state.

In the second experiment, a group of 12 Scottish B.F. ewes on a different farm were used. A single subcutaneous dose of 40 mg. of stilboestrol dipropionate was found satisfactory. Lambs were only available for eight of the 12 ewes in this second experiment. The results are shown in Table III.

Experience had shown young weak lambs as unsuitable for "twinning," so strong lambs of at least two weeks of age were used. Such lambs suckled keenly and were able to withstand a few days on short rations, whilst a full flow of milk was being established. Suckling was supervised for a few days, depending on the temperament of the ewes, most being keen to take a lamb. Seven days after injection all the ewes were secreting an ample supply of milk, in many cases about twice as much as a young lamb could cope with. About this time even the most reluctant ewes had settled to their foster mother duties and the signs of oestrus discussed below had abated so that it was possible to turn them out into the fields, and after a few more days, on to the hill. Each ewe reared a lamb which at weaning was of top quality and, in the case of twins, invariably better than its twin.

Discussion

Mammary Gland and Lactation. Milk secretion was satisfactory after a slow start in five out of the six sheep in Tables I and II, whereas in each ewe in Table III it was very satisfactory. More milk was produced initially than young lambs could consume, and as late as July the ewes suckling lambs had more milk than the normal milking ewes in the flock. Six weeks after injection the four ewes for which lambs were not available had enlarged mammary glands with milk in the ducts. Mastitis did not result from the failure to withdraw the milk from these ewes. While an individual variation in the milk yield following oestrogenic stimulation has been quite evident in cattle reported on by various authors, for example, Folley *et al.* (1944) and Hammond & Day (1944), the results obtained from the sheep of this experiment were remarkably uniform. It may be that the anoestrous state of the ovaries was advantageous since Hammond & Day (1944) found the yield remained low in bovines in whose ovaries a *corpus luteum* was present.

Oestrus. The sheep in Tables I and II came into oestrus within two to three days of the first injection and showed signs for some days. All the ewes in Table III came into oestrus after 48 hours and showed marked signs which persisted for three to four days. To avoid disturbance to other sheep and possible injuries the ewes were isolated during the period of oestrual display.

Subsequent Breeding History. The sheep in Tables I and II were not retained for breeding. Of the 12 ewes in Table III one died accidentally during the following winter. The 11 surviving ewes each gave birth unaided to good twin lambs during the first week of the next lambing season and milked satisfactorily. Six of them had been barren during the two previous seasons and should normally have been drafted out of the flock. This breeding history was better than that obtained in cattle by Hammond & Day (1944) or Parkes & Glover (1944). Folley, Stewart & Young (1944) and Folley & Malpress (1944), however, found a high percentage of their cattle mated successfully to the first service. Infertility and dystokia in sheep following repeated oestrogen injections have, however, been reported by Underwood *et al.* (1953).

Of the three methods of administration of stilboestrol used for the induction of lactation in ewes, the single injection of 40 mg. subcutaneously given to the Scottish B.F. ewes, being the simplest and most effective, is the method to be preferred. The dosage in Tables I and II appeared to have been too low. The more rapid response of the sheep in Table III seemed to confirm this.

By the method outlined, barren ewes or well grown gimmers can help to rear twin lambs and so increase the output of the farm. The method is vastly superior to bottle feeding for orphan lambs.

The 40 mg. single dose does not involve the shepherd in an excessive amount of extra work and it may well be that the handling between 48 and 72

(Concluded at foot of column 1 overleaf)

Veterinary Pharmaceutics

The earliest records of veterinary medicine appear in the hieroglyphics of Egyptian and other ancient civilisations. Later Pliny, Virgil and others wrote at length of the veterinary art. Veterinary pharmaceutics, however, was not given separate and detailed attention until the 17th century, when a number of important books appeared on the subject. Most of these concerned the horse and many were written by medical practitioners, notably John Bartlet and Henry Bracken.

During the 17th and 18th centuries, veterinary medicine was in the hands of farriers and cattle doctors. These individuals were trained under an apprenticeship system which, among other benefits, gave them access to many "secret" remedies and formulations. But few of these were published and for many years different types of treatment existed in different parts of the country for the same diseases.

During the 17th century lists of these remedies began to appear but there was little or no attempt at rationalisation of treatment although occasional similarities in the use of drugs occurred, such as savin for intestinal worms for both horses and cattle, and stavesacre for lice and other ectoparasites in various animal species. Several preparations which were much in use at that time such as sulphur and tar ointments have persisted to the present day, but most of the others have disappeared.

It was not until the 18th century that apothecaries began to interest themselves in making veterinary preparations. By then several influences had combined to place veterinary medicines on a more scientific foundation including entry of the general simplification of drugs and increased veterinary pharmaceutical skill. A number of physicians and surgeons who had interested themselves in the veterinary art held to ridicule the "blunderbuss" remedies of the farriers and pressed for their replacement by a more limited range of drugs prepared by apothecaries for human use. Advances in chemistry made available a greater variety of organic and inorganic salts of known composition, and greater skill was used to compound them in forms which were satisfactory for use. All this brought into being the first of the manufacturing veterinary chemists and made necessary the compilation of the earliest veterinary pharmacopoeias. One of the first of these was produced by John Gamgee in 1858 and for some time it was the standard text-book on veterinary therapeutics and toxicology as well as on pharmacopoeial and formulary matters. Another noteworthy pharmacopoeia was produced by Richard Tuson, professor of chemistry and materia medica at the Royal Veterinary College, in 1869. The monographs in Tuson's pharmacopoeia describe, for the first time in veterinary literature, synthetic organic drugs such as chloroform, ether, phenol, and acetic acid and the therapeutic advances of the time are indicated by inclusion in the sixth edition of acetanilide and anti-pyrene. Quality control of veterinary drugs also came under detailed study at this time. Cresswell's veterinary pharmacopoeia, published in 1886, included five veterinary injections—apomorphine, ergot, morphine, cocaine and hyoscine and detailed many preparations which are still in use.

Advances during the present century have been rapid and spectacular. They have included the vast enlargement of specific chemotherapy for animal diseases, the extensive use of vaccines and sera for prophylactic and therapeutic treatment, and the development of a wide range of proprietary veterinary medicines similar in quality and presentation to their counterparts in human medicine.

Special features of veterinary pharmaceutics still remain, however, for which there are no medical equivalents, *e.g.*, the existence of multidose injections of both aqueous solutions and suspensions, intramammary injections, implants, etc. Because of this and because of the necessity to set up modern standards for veterinary drugs the British Veterinary Codex was recently produced. This publication places veterinary pharmaceutics on virtually the same plane as its medical equivalent.

D. D. O.

---

hours can be dispensed with. The persistence of milk secretion in the four ewes in Table III, not suckled, suggests that it might be possible to prepare ewes in advance to take up lambs when available.

Since this experiment, a number of B.F. ewes and a few barren two-year-olds have been used in the manner described in Table III with regular success. A few have been given only 30 mg. and have responded in the same way as those given 40 mg. In the case of the barren two-year-olds so treated, it was observed that secretion of milk took 36 to 48 hours longer to commence.

Summary

1. Lactation has been successfully induced in barren anoestrus ewes and these proved good foster mothers for lambs.

2. A single dose of 40 mg. stilboestrol dipropionate in oil was most effective.

3. The procedure was harmless to the ewes.

References

FOLLEY, S. J., & MALPRESS, F. H. (1944). *J. Endocrin.* **4**. 1.
———. (1944). *Ibid.* **4**. 37.
———, STEWART, D. L., & YOUNG, F. G. (1944). *Ibid.* **4**. 43.
HAMMOND, J. (Jr.), & DAY, F. T. (1944). *Ibid.* **4**. 53.
MEITES, J., & TURNER, C. W. (1948). *Res. Bull. Univ. Mo. Coll. Agric.* 415 and 416.
PARKES, A. S., & GLOVER, R. E. (1944). *J. Endocrin.* **4**. 90.
PEETERS, G., & MASSART, L. (1947). *Ibid.* **5**. 166.
UNDERWOOD, E. J., SHIER, F. L., & PETERSON, J. E. (1953). *Aust. vet. J.* **29**. 206.

THE SUPPLEMENT

The next issue of the SUPPLEMENT to THE RECORD will shortly go to press. The Editor would be greatly obliged to Honorary Secretaries of Divisions, or others who have material for publication, if they would kindly forward it not later than next Wednesday, March 15th.

Leech Infestation of the Eye in Geese

BY

H. E. ROBERTS

Wolverhampton

Introduction

THERE appears to be no account in British literature of leeches producing pathogenic effects in geese, though Christiansen (1939) reported from Denmark the occurrence of severe eye infestation due to *Protoclepsis tesselata*. This communication records a similar condition in N. W. Shropshire.

History

The flock was one of 13 Chinese Geese bred in 1954 from a gander and two geese purchased two years previously. The management had been the same throughout, consisting of free range, with casual supervision, over a wide area which included a running stream with pools and marshy margins in places. There was also a good population of ducks, swans and moorhens, but these appeared healthy.

On October 3rd, 1954, a heavy thunderstorm occurred in the late afternoon, and later that evening the birds were found wandering rather aimlessly on the main road. The following morning the majority were seen acutely depressed and discharging from the eyes. One bird was missing and remnants indicated that it had been taken by a fox. Myxomatosis was rife in the vicinity and advice was sought as to the possibility of a connexion.

Examination

A visit was made on October 6th when three only of the 12 geese appeared normal, four being blind in both eyes and five in one. Each affected eye showed a watery discharge soiling the feathers beneath. The membrana covered the retracted eyeball and between the two, cupped over an opaque cornea, there was a cast of fibrino-caseous material. This was adherent only at its margins to the conjunctiva and could be removed without much difficulty. On and in its substance as well as in the grey mucous exudate filling the conjunctival sac numerous small leeches could be seen. Some contained dark blood and were more easily visible than those unfed. All were immature, in size varying from 3 to 5 mm. × 0·5 mm. to 10 mm. × 3 to 4 mm., larger specimens being infrequent. Movement was very slight : it had caught the owner's attention the previous evening when he was wiping away what were thought to be blood clots from the eyes. There were no nasal symptoms, nor were leeches obvious elsewhere on the body.

FIG. 1.—One of the affected geese with kerato-conjunctivitis.

FIG. 2.—Fibrino-caseous cast removed from an infected eye with parasites *in situ*.

Treatment

The treatment recommended was the manual removal of eye casts and parasites and instillation of antiseptic ointment to combat secondary infection, while preventing reinfestation by avoiding contact with water.

Next day, large numbers of unfed leeches were reported by the owner to be moving actively over the bodies of the geese and up the neck towards the head. He considered eye treatment useless because of fresh invasion from the body, so it was suggested that a band of grease be rubbed on the necks and that the leeches on the body be attacked by bathing in weak disinfectant.

On October 8th the worst affected goose was killed on humane grounds. Unfortunately it was not preserved for *post-mortem* examination.

By the 9th general improvement in the remainder was evident, no parasites being present on the body and none visible in the eyes. In the owner's opinion this was largely due to treatment ; he had observed no leeches passing the band of antiseptic ointment he had placed round the neck instead of grease. From this time there was continuous improvement so that by October 15th the majority of the birds had recovered. However, two were still partially blind with corneal opacities, and another was being considered for destruction since it was totally blind with one eyeball collapsed.

FIG. 3.—A number of leeches in water. The container is approximately 6 in. in diameter.

Identity of the Leech

Provisional identification was possible by the presence of four eyespots, a feature characteristic of *Protoclepsis tesselata*. The identity was kindly confirmed by Dr. Tebble of the Natural History Museum as *Theromyzon tessulatum* (O. F. Muller, 1774) (Synonym—*Protoclepsis tesselata*).

Discussion

Though considered to be uncommon in some districts *T. tessulatum* is probably of fairly widespread distribution in fresh water in this country. It is, at any event, numerous in the area of the case under discussion (Wilson, 1954). The natural hosts are wild water birds and the comparative paucity of reports (Mann, 1951) of infestation in them seems, in part at least, to be due to low pathogenicity. However, Rollinson *et al* (1950) have recorded *P. tesselata* in the nasal cavities of domestic ducklings and attributed deaths to it. This site would seem to be the commonest or normal one for the parasite. Christiansen (1939) cites only two previous instances of eye infestation, one in a man and one in a crow, so that the eye appears to be an abnormal site, one probably requiring special circumstances of occurrence, though he was unable to discover any. In his case young geese were affected in July and both ducks and geese had been kept under the same conditions for some years without trouble. In the present case two points may be relevant, firstly the heavy thunderstorm and secondly the fact that three of the geese remained free of any infestation throughout. One could suppose that in the wide range available there may have been at this time of year an area with a very high population of immature host-seeking leeches, that their activity or availability was increased by the sudden flush of rainwater, so that all but three of the birds which visited that area picked up on their bodies large numbers of parasites in a short time. The eye reaction would then follow direct invasion from the body surface. It is thought that the numerous leeches found on the body on October 7th, and not apparent the previous day, may have been concealed in the wet feathers. Drying of these on penning the birds from water would stimulate leech migration.

Summary

An outbreak of severe kerato-conjunctivitis in geese was found to be due to a heavy infestation with leeches of the species *Theromyzon tessulatum* (O. F. Muller, 1774).

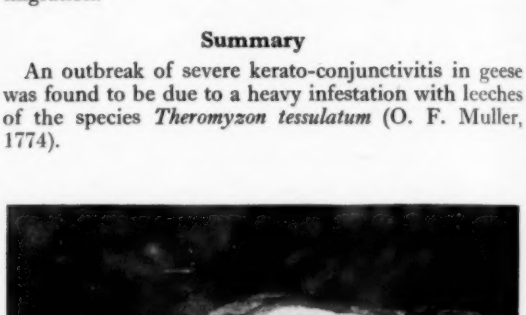

FIG. 4.—Localised corneal opacity 10 days after the initial parasitic invasion of the eye.

Acknowledgments are made to "Y Cymro" and Jeffrey Charles for photographs 1 and 3, and to Mr. H. C. F. Newton for photograph 2. Also, I am most grateful to the owners, the Rev. and Mrs. J. E. Rees, for their interest and co-operation.

References

CHRISTIANSEN, M. (1939). *Z. InfektKr. Haustiere*, **55**. 75.
MANN, K. H. (1951). *Ann. Mag. Nat. Hist.* **4**. 956.
ROLLINSON, D. H. L., SOLIMAN, K. N., & MANN, K. H. (1950). *Vet. Rec.* **62**. 225.
WILSON, E. A. (1954). Personal communication.

HOLIDAY EXCHANGE

A veterinary family living in Touraine (Chateaux de la Loire Region), would like to send a boy of 13 to England for a summer holiday with an English veterinary family. They would, in exchange, entertain a boy or girl, preferably of similar age, in France during the summer. The French boy would prefer the home counties if possible.

Any reader who may be good enough to offer hospitality is asked to write as soon as possible to the General Secretary of the B.V.A.

The American College of Veterinary Pathologists

We are indebted to Dr. J. R. M. Innes, Chief Pathology Branch, Medical Laboratories, Army Chemical Centre, Maryland, U.S.A., for the following notes on the work of this College. Dr. Innes writes:

Some years ago I drew attention in THE VETERINARY RECORD to the foundation of the American College of Veterinary Pathologists. I hope it may be of interest to veterinarians in Britain to learn something of its development. Before enlarging upon this, however, it may be useful to explain some basic differences in professional education between the United States and Great Britain. In Britain the various stages of education from undergraduate to post-graduate will, of course, be familiar. In the U.S.A., on the other hand, on the completion of his professional education the student is immediately awarded an M.D. (or D.V.M.), and there are no intermediate degrees giving a licence to practice.

There have been created in the American medical field a number of specialised colleges, though these are not colleges in the traditional English sense. They are intended to act as the examining boards of various societies who make awards of a kind similar to specialist and higher degrees in Britain. What is a novelty in British eyes is that each college has its own code of ethics in addition to those which govern the professions generally, the intention being to raise the intellectual and cultural standards of those specialising in the various fields of science.

The American College of Veterinary Pathologists was established in 1948 and is the first of its kind in the world. It was established along the pattern of the established medical Colleges in recognition of the need for a solid effort to solve the specialised problems involved in the teaching, research, and practise of veterinary pathology. Neither the writer, nor many of the members of the American College, believe pathology is only concerned with a study of states of disease and diagnosis, but is in effect a study of cause and effect in a living organism. With the intervention of time this view may dissipate much misconception of what the American College means, and vitiate ideas of those who do not understand pathology. Specialisation by members of the veterinary profession in the U.K. and U.S.A. in many ancillary sciences (nutrition, bacteriology, animal husbandry, physiology, and pathology) has resulted in a more competent service to the public and to the livestock industry, and indubitably has increased the prestige and usefulness of the profession. Additionally it has increased its status to a different level (not only in comparison with human medicine), from what it was 25 years ago. Pathologists have played their important rôle in this. The American College in the field of pathology is an organised effort to delineate, on a firm basis, the training and experience necessary to qualify as a veterinary pathologist. It has encouraged veterinarians to take up the subject as a scientific and professional career, to acquire training of an acceptable standard, and has furthered the recognition of such qualified specialists by suitable examination and certification.

It would take too much space to give details of all the prerequisites before a candidate is eligible to take the examination. Yet, it is important, and may be a little staggering for British veterinarians to be told, that the candidate must have completed five calendar years of professional experience subsequent to veterinary graduation (D.V.M.), at least two of which must be spent in supervised training in pathology acceptable to the Council, and at least one of the three remaining in teaching, research or practice of pathology. During those five years many candidates can, and do, earn the additional degree of Ph.D., but the latter is insufficient in itself to qualify for membership of the College.

At present, the membership stands at 58 veterinarians, and applications come in at the rate of about six to eight per year. It is a thriving institution and meets twice a year at the annual A.V.M.A. meeting, and in Chicago in November to dovetail with the meeting of the Annual Conference of Animal Disease Research Workers of North America. This body has a membership of over 250 and it is equivalent to the Veterinary Research Club in Great Britain, although the latter is far less formal. The present members of the College include meat inspection pathologists, heads and members of general and special diagnostic laboratories, teachers in veterinary schools, research pathologists in academic and commercial institutions, and officers of the Veterinary Corps of the Armed Forces. It is also noteworthy that included in the membership there are two practitioners (small-animal practice) who enjoy a high reputation as pathologists amongst their colleagues.

The first president was Dr. W. H. Feldman, of the Mayo Foundation, well known in British veterinary circles for his work on tuberculosis, and for his book on tumours of animals, which was the first of its kind. To him, and to the present Secretary-Treasurer, Colonel T. C. Jones, of the Armed Forces Institute of Pathology, the College has owed much for their inspiration and enthusiasm.

The recent November meeting in Chicago took the form of a seminar devoted to granulomatous diseases of animals, with some emphasis on the increasing mycotic infections. Twenty-two slides, together with clinical histories, had been previously distributed to all members, who then contributed their written diagnoses. Each case at the meeting was discussed at length by a moderator (in this case, Colonel T. C. Jones) and evoked most vigorous discussion.

It would seem that some similar system might well be started in England, perhaps as part of the meetings of the Veterinary Research Club, or the Association of Veterinary Research Workers and Teachers.

Current Literature

ABSTRACTS

I.—*Clostridium welchii* Toxin in the Intestinal Contents of Man. GLEESON-WHITE, M. H., & BULLEN, J. J. (1955). *Lancet*, February 19th, 1955, 384-385.

Nearly 30 years ago Williams produced some evidence in support of the hypothesis that the toxaemia of acute intestinal obstruction was due to the absorption of the toxins of *Clostridium welchii* from the contents of the obstructed intestine and he claimed a substantial reduction in mortality through the use of *Cl. welchii* antitoxin in treatment.

Other workers, however, were unable at the time to confirm that the toxicity of the intestinal contents of experimentally obstructed animals was due to any specific bacterial toxin.

Since then improvements in the methods used for the isolation and identification of the clostridia and their toxins has led to the recognition of the important part played by some of these toxins in the production of disease in man and animals. For example lamb dysentery and enterotoxaemia of sheep, and gas-gangrene, enteritis necroticans and a mild type of food-poisoning in man are now all attributed, in whole or in part, to the toxins of *Cl. welchii*.

The similarity between some of the features of enterotoxaemia of sheep and severe cases of acute intestinal obstruction in man, coupled with the predominance of *Cl. welchii* in the lesions of both conditions, suggested to the writers of this paper that the toxins of *Cl. welchii* might after all play some part in the production of toxaemia in intestinal obstruction.

The case described is one of acute obstruction of the small intestine in a man. Operation revealed that five feet of gangrenous ileum had been strangulated by omental adhesions to the base of the mesentery. The gangrenous intestine was resected and continuity restored with an end-to-end anastomosis. The patient died some eight hours after the operation. Samples of intestinal contents were taken at autopsy from the ileum just above the site of resection and from the colon immediately below the ileocaecal valve. Both specimens contained large numbers of organisms which had the typical appearance of *Cl. welchii*. Bacteriological investigation showed that in addition to *Cl. welchii* type A there was present *Cl. welchii* type D. The writers consider that it is reasonable to postulate that in this fatal case of acute intestinal obstruction *Cl. welchii* type D was present in the small intestine at the time of obstruction and that a considerable amount of epsilon toxin was produced during the enormous and rapid proliferation of the intestinal flora that takes place on such occasions.

II.—Recovery of *Clostridium welchii* Type D from Man. KOHN, J., & WARRACK, G. HARRIET. (1955). *Lancet*, February 19th, 1955. 385.

This report deals with a case in which there was a history of amoebic dysentery some 12 years earlier. Violent attacks of diarrhoea led to a bacteriological examination of the stools. This revealed the presence of *Cl. welchii* which was subsequently shown to be type D. A second sample of the patient's faeces obtained after four weeks again produced a pure culture of *Cl. welchii*. The patient's serum was found to contain 0·2 unit of epsilon antitoxin per ml. whereas the sera from nine healthy controls contained no detectable epsilon antitoxin. The problem of the pathogenicity of the strain of *Cl. welchii* type D isolated in the present case is somewhat complicated by the history of post-dysenteric colitis. This condition may, however, have been the predisposing factor creating a favourable environment for infection with the organism.

III.—*Clostridium welchii* as Intestinal Pathogen. Leading Article. *Lancet*, February 19th, 1955. 390-391.

This leading article refers to the two papers abstracted above, pointing out that these independently report the isolation for the first time of *Cl. welchii* type D from lesions of the intestine in man. It is then pointed out that this completes an interesting circle which began in 1926 when Williams described evidence which, in his opinion, suggested that the toxaemia of acute intestinal obstruction in man was due to absorption of the toxins of *Cl. welchii* from the contents of the obstructed intestine. Unfortunately the greater part of the clinical evidence in man rested on the benefits resulting from treatment with gas-gangrene antitoxin. It was not then possible to confirm that the toxaemia was due to toxaemia produced by this organism.

Bennetts working in Australia on enterotoxaemia of sheep established that *Cl. welchii* type D is an important intestinal pathogen of sheep. Much work by many individuals has led to an accurate knowledge of the clostridial organisms and their toxins and the application of this knowledge has made it possible to identify *Cl. welchii* type D in relation to these two cases in man. G. F. B.

Preliminary Trials with Piperazine adipate as a Veterinary Anthelmintic. SLOAN, J. E. N., KINGSBURY, P. A., AND JOLLY, D. W. (1954). *Journal of Pharmacy and Pharmacology*, Vol. 6, No. 10, pp. 718–724.

This paper briefly records the results obtained in preliminary trials with pure piperazine adipate which shows promise of being a very efficient ascaricide with a wide margin of safety. For dogs, an anthelmintic efficiency of 100 per cent. against *Toxocara* and *Toxascaris* at dose rates from 25 to 200 mg. per kg. bodyweight, not more than 40 per cent. against *Ancylostoma caninum* at dose rates from 100 to 300 mg. per kg., and almost 100 per cent. against *Uncinaria stenocephala* at a dose rate of 100 mg. per kg. is indicated. It showed no apparent effect against *Taenia hydatigena* and *Dipylidium caninum*. For cats, 100 per cent. efficiency against *Toxocara* and *Toxascaris* seems probable at a dosage rate of 100 mg. per kg. Of one lion and three lionesses infected with *T. leonina*, three of the beasts were cured and infestations in the other was markedly reduced at a similar dose rate. For pigs, a low dose rate of 150 mg. per kg. bodyweight was ineffective and a rate of

300 to 400 mg. per kg. up to a maximum of 40 g. appears necessary for 100 per cent. cure for *Ascaris lumbricoides*. Efficiency against *Oesophagostomum* spp. in pigs is probably 80 to 90 per cent. at practicable dose rates. For equines, dose rates of 120 to 150 mg. per kg. bodyweight were ineffective, whereas 400 mg. per kg. removed apparently all *Parascaris equorum* present in ponies and zebras. The efficiency at dose rates of 250 to 400 mg. per kg. against females of *Oxyuris equi* was 80 to 100 per cent. and against males and larval stages, 60 to 90 per cent. Against *Trichonema* spp. and *Triodontophorus* spp. a minimum efficiency of 85 per cent. can be expedited at a suitable dose rate. For poultry, virtually 100 per cent. control of *Ascaridia galli* is possible when more than 150 mg. per kg. bodyweight is given. This drug shows advantages over others in current use since it can be given in both wet and dry food, it lacks irritant effects on the gut mucosa and other toxic manifestations, and there is no need for supporting therapy such as purgatives. The absence of vomiting after dosing by gelatine capsule, or tablets, or as a powder mixed with the food is a valuable asset in the treatment of dogs and cats and, for poultry, it can be given in wet or dry mash and there is no subsequent feather-staining such as occurs with phenothiazine.

+ "Expected" - See Correction P.248

J. N. O.

BOOK REVIEWS

The Anatomy of the Bovine Foot. A Pictorial Approach. By ROBERT F. WAY, V.M.D., M.S., 1954 University of Pennsylvania Press, Philadelphia, U.S.A. (London: Geoffrey Cumberlege, Oxford University Press, 32s. net. Amen House, Warwick Square, London, E.C.4).

Dr. Robert Way has been Associate Professor of Anatomy at the School of Veterinary Medicine, Pennsylvania University, since 1949. He regards visual methods of teaching anatomy as superior to descriptive methods, and the main purpose of this book is to act as an atlas to complement actual dissections undertaken on the fore and hind limbs of the ox below the knees and hocks.

The volume consist of a series of some 28 shaded full page drawings of various aspects of fore and hind limbs, each of which is partly diagrammatic, and opposite each illustration is a page containing a brief description of the salient features to be observed.

In some ways, the descriptive text is disappointing since, presumably in an effort to limit the descriptions to salient features only, the author has omitted many details which might well be regarded as of an importance equal to, or even greater than, some of those described. Great emphasis is placed upon the topography and appearance of the tendons and ligaments of the foot, for example, of the 17 illustrations given to depict the lower part of the foreleg, eight are solely concerned with these structures.

The illustrations are the author's work; on the whole, they are clear and readily followed when the reader has become accustomed to the unusual sepia tones employed. In some, the positions of the joints depicted, while doubtless convenient for the anatomist, are not such as the surgeon or the clinician will readily follow. For the latter, good photographs of careful dissections might in some cases have done much to supplement some of the illustrations used.

This is not a book which encourages an enthusiastic eulogy. It may well appeal to the teacher and to the student as a means of referring quickly to the salient features of the anatomy of the bovine foot, but it will not be regarded as entirely satisfactory by the surgeon or clinician, or by the pure anatomist who wants precise and comprehensive information on detailed topographical relationships.

It cannot be said to be good value for its price of 32s.

Veterinary Necropsy Procedures. (1954). Edited by Thomas Carlisle Jones *et al.* 136 pp. fully illustrated. Lippincott & Company, Philadelphia. £2 10s.

The aim of this book is to provide a guide for the performance of *post-mortem* examinations of animals. The book is sponsored by the committee on Registry of Veterinary Pathology of the American Veterinary Medical Association and is the work of 12 contributors under the editorship of T. C. Jones and C. A. Gleiser.

The text is divided into 13 chapters and covers general principles of necropsy technique on large and small animals; procedures for wild animals, selection and preparation of specimens for laboratory examination; the collection and preservation of parasitological specimens; suggestions for facilitating laboratory diagnosis of various diseases and a chapter on the preparation of *post-mortem* records.

Some of the chapters in this book are admirable and will be very useful. Unfortunately, not all the book is of the same high standard. Some systems of the body, *e.g.* the endocrine, locomotor, central nervous systems and the organs of special senses are very inadequately covered. As an example of this one quotes "special structures such as nares, paranasal sinuses, spinal canal and marrow cavities can be opened by *obvious procedures when necessary*" (reviewer's italics). In the section which deals with humane euthanasia the use of a "sledge-hammer or axe (non-cutting surface)" would be better deleted, as would the recommended use of strychnine.

Two serious omissions in this book are: failure to stress the importance of measurement; and secondly, the usefulness of the microscope at *post-mortem* examinations. Estimates as to size and weight are worse than useless; accurate measurement is essential if necropsy procedures are to become a science as well as an art.

The book is well produced on fine paper. There are many line drawings which are clearly labelled and which will be very useful to the student. There is a good index and a short but valuable list of references.

All about Pigs: 800 Questions and Answers. Pig Publications Ltd., Lloyds Chambers, Ipswich, 1955.

This book is, in fact, a collection of questions and answers, as published in the weekly publication "Pig Farming," together with numerous useful tables. It is to be recommended as a general reference book.

The Register of Veterinary Surgeons

Under Section 25 (3) of the Veterinary Surgeons Act, 1948, and the provisions of Statutory Instrument No. 1150 of 1953, the names of the following have been removed from the Register of Veterinary Surgeons. The addresses given are the last registered address in each case:—

Arthur Williams Allen,* The Woodlands, Ketley Town, Wellington, Salop; George T. Anderson,* 1, Burgh Road, Alysham, Norfolk; William Knight Barron,* 22, Poltimore Road, Guildford, Surrey; Alfred James Beckett,* 20, Southwood Road, Aigburth, Liverpool, 17; William D. Blanchard, Wynfield, Ryelands, Leominster, Herefordshire; Thomas Going Stoney Bogue,* 5, Kenilworth Square, Dublin; Duncan Campbell, 33, High Street, Thurso, Caithness; George Edward Clarke, Ministry of Agriculture, Parliament Buildings, Stormont, Belfast; George Brandon Cooper, 1, Bedford Road, London, S.W.4; Victor Seymour Martin Cope,* 178, Stoneleigh Park Road, Ewell, Surrey; Charles A. W. Cunningham, 4, Cholmeley Crescent, London, N.6; Samuel Craig Currie,* Mount Oriel, Antrim, N. Ireland; Herbert Henry Curson,* 16, Myrtle Street, Pretoria, South Africa; Michael Darby,* Clonbur, Trim, Co. Meath, Eire; Robert Ellis Dean,* Old Forge House, Longford, Derbyshire; James Atkinson Dixon,* 37, Saunders Street, Southport, Lancs.; James Eadie,* Hillside, Alfriston Road, Seaford, Sussex; Brendan Thomas Farrelly, 22, Zion Road, Rathgar, Dublin; Joseph Patrick Fitzgerald, 73, Orchard Road, St. Annes-On-Sea, Lancs.; James Anthony French,* Alnwick Vicarage, Sleaford, Lincs.; James Douglas Galloway, c/o Mrs. Rawson, Ashbank, Troqueer Road, Dumfries; Andrew John Frederick Gibson* (Commonwealth List), Burrungurroolong, Goulburn, New South Wales, Australia; Heather Jean Gibson* (Commonwealth List), Burrungurroolong, Goulburn, New South Wales, Australia; Peter Gillespie, 88, Store Street, Manchester; Archibald Edmund Gilmore, c/o 288, Camden Road, London, N.7; Robert Aubrey Gooderidge, c/o Messrs. Glyn Mills & Co., 22, Whitehall, London, S.W.1; Annesley de R. Gordon, Mountkearney, Newry, Co. Down; James Arthur Grounsell Gosling, 50, Cholmeley Crescent, London, N.6; Samuel Gourley, 1 & 2, Edward Street, Brighton, Sussex; Tom Hawley Greatbatch, Oulton Heath, Stone, Staffs.

Desmond Vincent Hannigan,* "Lourdesville," Andersonstown, Belfast, N. Ireland; Andrew Kerr Hart,* Church Lodge, Upton-On-Severn, Worcs.; Louis Herbert, Enniskillen, Co. Fermanagh; William Francis Hughes,* Esgobty, St. Asaph, N. Wales; William Smith Inglis,* Broomfield House, Rutherglen, Glasgow; Horace Jewell, Veterinary Department, Parliament Buildings, Stormont, Belfast; Ian Lind Johnstone* (Commonwealth List), 113, Dangar Street, Armidale, New South Wales, Australia; Howard Newcome Kellas, The Wilderness, Repps Road, Martham, Great Yarmouth, Norfolk; William Kennedy,* Merecot, Swanage Road, Lee-on-the-Solent, Hants.; John William Knowles,* Flat 1, 11, Brunswick Terrace, Hove 2, Sussex; John Mc. Ilvenna, 67, Osborne Road, Newcastle upon Tyne, Northumberland; Frederick Charles Mahon,* 201, Goldhawk Road, London, W.12; S. G. Masterman,* Wantage, Berks.; Arnold D. Minor, 63, Glen Eldon Road, St. Annes, Lytham St. Annes, Lancs.; Bernard Moss, 98, High Road, Woodford Green, Essex; Edward O'Hagan, c/o Halstead Hotel, Halstead, Essex; William Tempest Olver,* Coton Lodge, Lichfield Road, Tamworth, Staffs.; Frederick Charles O'Rorke,* Lochan Lodge, Pontoon, Foxford, Co. Mayo, Eire; Alfred Bernard Over, 26, Railway Terrace, Rugby, Warwicks; Richard Paine,* 25, Ridge Road, Pietermaritzburg, Natal, South Africa; William Alfred Pallin,* c/o Glyn Mills & Co. (Holt's Branch), 22, Whitehall, London, S.W.1; Edwin Thirkwell Pearce,* Southwood, Rhos Road, Rhos-on-Sea, N. Wales; Robert Haugh Pinching, 6, North Street, Horsham, Sussex; Robert Platt,* Tryddyn, Llangollen, N. Wales; Richard A. Plunkett, 3, Kimbolton Avenue, Bedford; John Charles Stephenson Powell,* St. Cyrus, 66, Coppin's Road, Clacton-on-Sea, Essex; Walter Charles Prudames,* Belmont House, Winterton Road, Hemsby, Norfolk; John Gerard Quinn,* 2, Balmuildy Road, Bishopbriggs, Glasgow.

William Lister Richardson,* Chywore, Trevone, Padstow, Cornwall; James Robert Rigby,* 27, Church Road, Lytham, Lancs.; Helen Mary Robertson, c/o American Express Co., Haymarket, London, S.W.1; Olgierd Rymaszewski,* 163, Lees Road, Oldham, Lancs.; Thomas Alderson Shaw, 16, Hawkesly Road, Hyson Green, Nottingham; Eleanor Josephine Shortt,* 3, High Street, Saffron Walden, Essex; Walter Sime, 17, Lemon Terrace, Leven, Fifeshire; Henry George Simpson,* Grenville Place, St. Leonards Avenue, Blandford, Dorset; Sidney Smith,* 20, Castle Street, Farnham, Surrey; P. L. Smyth, 39, Gloucester Street, London, S.W.1; Lawson Lamb Steele,* 31, Ridley Avenue, Blyth, Northumberland; F. B. O. Taylor,* Osborne House, Wadhurst, Sussex; F. W. H. Thomas, 6, Linden Avenue, Bognor, Sussex; William Howard Thomas,* c/o Messrs. Glyn Mills & Co., Kirkland House, Whitehall, London, S.W.1; Harry Leitch Torrance,* 77, Repton Road, West Bridgeford, Nottingham; Walter Bland Towell, The Poplars, Mainsforth Road, Ferryhill, Co. Durham; Thomas Lionel Vaisey,* 3, High Sussex, Crowborough, Sussex; Richard Waddy,* c/o Mrs. L. Webber, 520, Balmoral Street, Winnipeg, Manitoba, Canada; Arthur Walker,* 72, Kremlin Drive, Stoneycroft, Liverpool; William Walker, 5, Hereford Road, Harrogate, Yorks.; William Simpson Walker,* High House, Sedgwick, Kendal, Westmorland; J. E. Wallis,* c/o Barclays Bank, Ltd., 142, Western Road, Brighton, Sussex; W. Clarke Watts,* 3, Lime Street, Sutton Bridge, Spalding, Lincs.; James B. Welham, 62, Sussex Gardens, London, W.2; E. R. Holme Woodcock, c/o Messrs. Glyn Mills & Co. (Holt's Branch), 22, Whitehall, London, S.W.1; John Bishop Young,* 14, Brook Street, St. Neots, Huntingdonshire.

*Indicates those persons who have requested the removal of their name from the Register.

News and Comment

O.E.E.C. SEMINAR ON THE CONTROL OF JOHNE'S DISEASE

Nearly 30 veterinarians from 10 countries in Western Europe took part in discussions on the control of Johne's disease in the course of a seminar from February 25th to March 5th, organised by the Ministry of Agriculture on behalf of the European Productivity Agency of O.E.E.C. The Scientific Director of the seminar was Dr. Stableforth, Director of the Ministry's Laboratory at Weybridge, where all the proceedings were held with the exception of the formal opening, which took place in the Ministry's London headquarters. The opening meeting was addressed by the Chief Veterinary Officer, Mr. J. N. Ritchie, who spoke on "Veterinary Services in the United Kingdom."

The following countries sent representatives:—Austria, Belgium, Denmark, France, Germany, Iceland, Republic of Ireland, Italy, Netherlands and the United Kingdom. There were in addition representatives from O.E.E.C. and the Food and Agricultural Organisation of the United Nations, notably Sir Thomas Dalling. Guest speakers on the control of Johne's disease in bovines included Mr. N. H. Hole, Senior Research Officer in Pathology, Veterinary Laboratory, Weybridge; Dr. A. Wilson Taylor, Head of the Veterinary Bacteriology Department, Royal (Dick) School of Veterinary Studies, University of Edinburgh; Professor Pierre Goré, State Veterinary School, Lille; and Professor A. van d. Schaaf, Professor in the Veterinary Faculty of Utrecht. The guest speaker on Johne's disease in sheep and goats was Professor Sigurdsson, of the Institute for Experimental Bacteriology, University of Iceland, Keldur, Reykjavik. Among the supporting speakers were: Dr. J. Stamp, Animal Disease Research Association, Moredun Institute, Gilmerton, Edinburgh; Mr. T. M. Doyle, of the Veterinary Laboratory, Weybridge; Mr. J. Rankin, of the A.R.C. Field Station, Compton; Mr. Peter Stuart, of the Veterinary Laboratory, Weybridge; and Mr. W. E. Lawrence, of the Veterinary Investigation Centre, University of Liverpool.

Mr. J. Farrell, Ministry of Agriculture, Whitehall, London, was the Programme Co-ordinator.

We believe that this seminar was the first gathering of European experts called together specifically to exchange information on the subject of Johne's disease. The proceedings will be published at a later date and we hope to review them in detail as soon as may be possible.

A recommendation arose as a result of the discussions that where a country has comparatively few cases of Johne's disease efforts should be made to stamp it out by slaughter. In countries more heavily infected it was suggested that infection-free herds should be built up.

Dr. Stableforth said that endeavours were being made to see whether a blood test for the disease could be used as the basis of a programme of eradication. Some 50 farms were co-operating with the Ministry's workers in this matter.

Sir Thomas Dalling said that within recent years the British farmer had become more "disease minded" and was appreciating more clearly what were the economic effects of such scourges as Johne's disease. This realisation should help in the battle against it.

APPOINTMENTS

Mr. E. J. H. Ford, M.V.SC., M.R.C.V.S., Veterinary Science Division, Boots Pure Drug Co. Ltd., has been appointed to the staff of the Agricultural Research Council's Unit for Animal Physiology, Babraham Hall, Cambridge.

Mr. D. L. Haxby, M.R.C.V.S., will be joining the staff of the Veterinary Science Division, Boots Pure Drug Co. Ltd., Thurgarton, Nottingham, on March 14th, 1955.

CORPORAL P. J. RANDALL, R.A.V.C.

It was not made clear in the account of the award of the George Medal to Corporal Randall, as printed in "News and Comment" on page 187 last week, that we were indebted for this information to the Editor of the R.A.V.C. Journal. We much appreciated the gracious action of the Editor in allowing us to publish this information even in advance of the appearance of his own quarterly journal.

R.A.V.C. GOLFING SOCIETY

The annual meeting of the R.A.V.C. Golfing Society will be held at the North Hants Golf Club, Fleet, on Tuesday, June 9th, 1955.

The inclusive cost will be 17s. 6d. for each person. This will include green fees, lunch and tea. Those wishing to attend should inform Major J. H. Wilkins, R.A.V.C. School and Stores, Aldershot, on or before Monday, June 6th, enclosing cheque or postal order.

TURKEY FEDERATION CONFERENCE

The veterinary profession was prominent at the recent Fourth Turkey Federation Conference, held at Eastbourne. This Federation, started only four years ago, is probably one of the most vigorous and healthy organisations of its kind in the country. The Chairman, Mr. Rupert Chalmers Watson, is the son of Dr. Chalmers Watson, so well known at one time to students at the "Dick" in Edinburgh.

Dr. W. M. McKay has been a member of the Committee since its foundation, and also a member of its executive. He was Chairman of the session in which Dr. R. F. Gordon gave his paper, which has already been reported in THE RECORD. At the end of this session Dr. McKay presented Dr. Gordon with a cheque for £200 on behalf of Messrs. May and Baker, with the best wishes of the Federation and their hopes that the poultry station of the Animal Health Trust would receive more and more support from the industry itself.

Another veterinarian, Dr. W. P. Blount, gave a paper on the varying quantities of meat on turkeys.

Mr. J. E. Wilson was present from Edinburgh and Mr. de Gruchy, of the Veterinary Investigation Service, from Kent. At the request of the Chairman, Dr. McKay opened the discussion on the paper by Mr. Duke on the "Nutritional Requirements of the Turkey."

PERSONAL

Births

CLARKE.—On March 2nd, 1955, at Crowborough War Memorial Hospital to Barbara (*née* Cayless), wife of P. B. Clarke, B.V.SC., M.R.C.V.S., of Fairfield House, Newtown, Uckfield, Sussex, a sister for Nicola.

PHILP.—On February 27th, 1955, at Upper Farm, Sharnbrook, Bedford, to Ann (*née* Preston), wife of Jack McLean Philp, M.R.C.V.S., a son, Andrew.

TRAUB.—On March 4th, 1955, at St. David's Hospital, Bangor, N. Wales, to Janet, wife of L. D. Traub, M.R.C.V.S., of "Elgol," Pwllheli, a son.

R.C.V.S. OBITUARY

MEADE.—Richard Harold (Capt. late N.Z.V.C.), of 15, Worcester Street, Palmerston North, New Zealand. Graduated Dublin, December 17th, 1904. Died February 23rd, 1955, aged 86 years.

COMING EVENTS

March

9th, 10th & 12th. Revue "Take Us From Here," by students of the R.V.C., at Goring Parish Hall, Goring-on-Thames, Berks, 7.30 p.m.

16th (Wed.). Joint Meeting of the Sections of Comparative Medicine and Pathology at the Royal Society's House, 5 p.m.

17th (Thurs.). Ordinary General Meeting of the South-Eastern Division, B.V.A., at the Royal Star Hotel, Maidstone, 2.30 p.m.

18th (Fri.). Special Meeting of the Mid-West Division, B.V.A., at the Berkeley Café, 3 p.m.

24th (Thurs.). Annual General Meeting of the Supplementary Veterinary Register Division, B.V.A., at 7, Mansfield Street, Portland Place, London, W.1, 2 p.m.

Fourth Annual Dinner-Dance of the East Midlands Division, B.V.A., at the George Hotel, Nottingham, 7.15 p.m.

24th (Thurs.). 71st Annual General Meeting of the Western Counties Division, B.V.A., at the Rougemount Hotel, Exeter, 12.45 p.m. (luncheon), 2.30 p.m. meeting commences.

General Meeting of the Herts and Beds Division, B.V.A., at the Red Lion Hotel, Luton, 7.30 p.m.

25th (Fri.). Annual General Meeting of the South Wales Division, B.V.A., at Carmarthen.

General Meeting of the Lincolnshire Division, B.V.A., at the Grand Hotel, Peterborough, 2.15 p.m.

31st (Thurs.). Annual Dinner and Dance of the Yorkshire Division, B.V.A., at the Old Swan Hotel, Harrogate, 7 p.m.

April

1st (Fri.). 9th Annual General Meeting of the A.V.T. & R.W's at Maclay Hall, University of Glasgow, 17, Park Terrace, Glasgow, C.3, 10.30 a.m.

2nd (Sat.). Annual Dinner of the B.R.X. Club, at the Royal Veterinary College, 7 p.m.

23rd & 24th (Sat. & Sun.). Annual Reunion Weekend for 1952 R.V.C. graduates and contemporaries. Dinner at "Ye Miller of Mansfield" Hotel, Goring, Saturday, 7.30 p.m.

30th (Sat.). Association of State Veterinary Officers Annual General Meeting and Dinner in London.

May

6th (Fri.). Royal Veterinary College 163rd Annual Ball at the Hyde Park Hotel.

June

10th (Fri.). Annual Dinner of the R.A.V.C. Officers' Club, at Grosvenor House, Park Lane, London.

September

4th to 10th, 73rd Annual General Meeting and Congress of the British Veterinary Association at Belfast.

APRIL MEETINGS OF COUNCIL AND COMMITTEES, B.V.A., IN EDINBURGH

AT THE ROYAL (DICK) SCHOOL OF VETERINARY STUDIES

Monday, April 4th.—

10.15 a.m. Veterinary State Medicine Committee.
2 p.m. Home Appointments Committee.
4 p.m. Organising Committee.

Tuesday, April 5th.—

10.15 a.m. Parliamentary & Public Relations Committee.
11.30 a.m. Finance Sub-committee.
2 p.m. General Purposes & Finance Committee.

Wednesday, April 6th.—

10.30 a.m. COUNCIL MEETING.

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Cumberland. Whitrigg Grange, Kirkbride, Carlisle (Mar. 1).

Fife. Airdrie Farm, Anstruther (Mar. 3).

Lanark. Walesley Farm, Strathaven (Mar. 1).

Notts. The Grange, Aslockton (Mar. 3).

Renfrew. Bonnyton Moor Farm, Eaglesham, Glasgow (Mar. 3).

Swine Fever

Ches. Higher House Farm, Mottram St. Andrew, Macclesfield (Mar. 1); Tattenhall Lanes Farms, Tattenhall, Chester (Mar. 3).

Essex. New Hall Farm, Mundon, Chelmsford; Piggery, Bridgefoot Farm, Hatfield Broad Oak, Bishops Stortford (Mar. 2); Mundon Hall Farm, Mundon, Chelmsford (Mar. 4).

Lancs. Bankfield Lodge, Little Singleton, Blackpool (Mar. 3); Smallwood Hey Farm, Pilling, Preston; Jacksons Farm, off Bentley Lane, Wrightington, Wigan (Mar. 4); Barons Farm, Courage Low, Wrightington, Wigan (Mar. 7).

Monmouth. Polefield Piggeries, Newport Docks, Newport (Mar. 1).

Norfolk. Pine Farm, Lower Bodham, Holt (Mar. 7).

Salop. The New Inn, Marton, Chirbury (Mar. 4); Moss Farm, Ellerdine, Wellington (Mar. 7).

Warwicks. 30, Creynolds Lane, Monkspatch, Shirley, Birmingham (Mar. 4); Little Fosse Farm, Combrook; Piggery at Park Lane and behind 5, Park Lane, Snitterfield, Stratford-on-Avon (Mar. 7).

Worcs. Pheasant Farm, Crabbs Cross, Redditch (Mar. 5).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

MYXOMATOSIS

Sir,—I read Mr. Worden's informative letter on Myxomatosis with great interest. I am most grateful for his observations on the nicotinic acid requirements of dogs, which tend to confirm my theory of the connection between the appearance of black tongue in dogs and the disappearance of rabbits in Montgomeryshire. Needless to say, I have never advocated that farmers should leave the adequate feeding of their dogs to the benevolence of nature.

The question of myxomatosis and the extermination of rabbits seems to be somewhat confused. Apparently the law as it now stands states that it is an offence actively to help the spread of the disease. Undoubtedly there have been cases of individual farmers introducing myxomatosis on to their own land, but on the whole I presume that the disease, in Great Britain at least, was a natural epizootic. It can thus be classed as a tragedy and not another crime perpetrated by humanity. In France, where the epizootic originated, the reverse would appear to be the case, as the first outbreaks have been attributed to the malicious introduction of the virus to rabbits on a private estate.

At the same time as government policy condemns the spread of the disease, it advocates the total extermination of the rabbit species by other means and calls for the mopping-up of survivors in affected areas by an intensification of the work of the pest control officers.

Now my "humanitarian attitude" does not blind me to the fact that there were far too many rabbits about before this plague, neither does it induce me to condemn all methods of control of species whose numbers force them to compete with humanity for food. It is impossible for anyone who has read Heinrich Harrar's remarkable account of his "Seven Years in Tibet" to doubt that a community can exist whose government expressly forbids the taking of all forms of life. Yet the Tibetans probably live their lives in those inhospitable and rugged regions with greater happiness, cheerfulness, and courtesy than could be found under any other system of government. While greatly respecting this extreme concern for the rights of other living things I would not suggest that the British should discipline themselves to the same extent because I think it impracticable. However, the events of our own lifetime in Europe should have taught us the equal impracticability of pinning too much faith on the total extermination of rivals in accordance with government edicts as a means to gaining lasting satisfaction. Painful examples of my meaning will come only too readily to mind, but in passing over the subject I should like to observe that in the early days of communism in Russia the peasant farmers were "ranked as a major agricultural pest" and duly liquidated. Mr. Malenkov appears to have recently made the discovery that all the tractor factories of the Ukraine cannot replace the lost skill and love of the land of the kulaks.

I believe that the overgrowth of the rabbit population (pre-myxomatosis) was due to the general decline of agriculture as a way of life in this country. Everywhere—but more especially in rural Wales—people are leaving the land. When they leave, the rabbits and bracken take possession. In the case of neither "pest" is it possible to get lasting results by methods of mass destruction. If the people came back to tend the land in reasonable sized units, with adequate labour to maintain hedges and ditches, rabbits and bracken will naturally recede and live with man in as near harmony as can be found in an imperfect world.

But this is a long term policy. It will take a great deal of patience and time, and that is just what modern man hasn't got. He is in too much of a hurry to get . . . where?

Yours faithfully,

F. B. EDWARDS,

"Newgate,"
Llanbrynmair,
Mont.

February 28th, 1955.

THE SCHEME FOR ANIMAL NURSES

Sir,—As an Australian graduate with considerable experience in small-animal practice I was amazed to read Mr. Johnson's letter in THE RECORD of February 26th. In it he showed, I think, a complete lack of knowledge of the problems facing a small-animal practitioner.

In his letter he listed the work that these trained nurses would do and then proceeded to discuss each point. I shall do the same.

(1) "Assist in surgeries—controlling animals, carry out simple dressings." He claims that the owner is capable of controlling the animal. This, in most cases is not so. Time and time again I found in practice that an animal which was quite uncontrollable when the owner was present quietened immediately it was removed from the owner's sight. Again, there are very few owners who can really hold an animal to make it safe for routine treatments. To say "the owner certainly does not like anyone else handling his pet" is absurd. I must say that I feel safer in treating an animal when I know that the person holding it is doing so competently.

(2) "Sterilise instruments." Mr. Johnson claims that this is not a big job in any practice and should not hold up normal duties. I could not disagree more. With a busy afternoon of major surgical operations ahead the thought of cleaning and sterilising instruments and cloths after each operation is most depressing and the action itself very time consuming.

(3) "Give anaesthetics under direction." Mr. Johnson states that this is a job for the surgeon. Initially, yes, but surely not when the operation, which necessitated the anaesthetic, is in progress.

(4) "They would be useful for routine care of patients in veterinary hospitals." Here Mr. Johnson makes a most sweeping and, I think, irresponsible statement. He claims that small-animal practices, carrying out a lot of surgical work, do not need a hospital. I am quite certain that most owners would prefer their pets to be hospitalised after serious surgical intervention. Undoubtedly the animals would be happier at home, but so would thousands of human patients in hospitals where they are being kept for their own good and where expert attention is immediately available in emergencies.

(5) "They will dispense medicine." Many specifics are still supplied to clients from bulk, and a trained nurse would be quite capable of doing this job under orders from the veterinary surgeon.

(6) "They would examine blood, urine, skin scrapings, faeces, along with the duties of radiologist and radiographist." Mr. Johnson will find in a large number of human hospitals that most of these jobs are done by well-trained laymen. The routine examination of blood, urine, skin scrapings, and faeces is not difficult but is time consuming and for this reason tends to be somewhat neglected in practice. The development of X-ray plates is another tedious job which can be done by a trained nurse.

Veterinary practice would, in my opinion, benefit enormously with the introduction of such a scheme as this. One has only to look at a human hospital, where nurses are very much a part of the routine, to prove this. Trained veterinary nurses would undoubtedly take an enormous load off the veterinarian and enable him to concentrate on more professional work, and by so doing make his service to his clients more thorough.

Yours faithfully,
P. K. van STELLINGWERFF,

7a, Sinclair Gardens,
Shepherds Bush, W.12.

March 7th, 1955.

Sir,—It is somewhat astonishing that there is no support this week for the letter from Mr. Johnson in your last issue. Apart from his excellent detailed considerations, the shortage at the present time of girls for hospital and mental nursing, care of the aged, and nursing help for mothers of young children, prevent one's conscience from lending support to this scheme. It must, inevitably, draw on the supply of prospective staff for some, if not all, of these desperately needy objects.

Yours faithfully,
WILLIAM TRIGGER,

Queen Street,
Newcastle,
Staffs.

March 5th, 1955.

CANDIDATES FOR ELECTION TO COUNCIL R.C.V.S.

Sir,—With reference to this matter, one point which to me does not appear to have been given sufficient prominence, is that with the present composition of the Council, there being such a large number of nominated members, the whole profession is ruled and governed by college professors.

As the vast majority of our members still have to earn their living by selling their professional skill to the cold-hearted and dubious-minded man in the street, surely they should concentrate on sending to the Council as many members of like interests and troubles to themselves as possible, and not waste their votes on those who pass their time in the sheltered groves of Academy, whose interests are already well safe-guarded.

Yours faithfully,
A. J. BEESON.

The Stone House,
Boughton Monchelsea,
Maidstone, Kent.

March 5th, 1955.

ADVERTISER'S ANNOUNCEMENT

Barium Sulphate Suspension

Evans Medical announce the issue of FOTOGEL, a new Barium Sulphate Suspension, which is stable and palatable. Each ml. contains 1 gramme Barium Sulphate B.P. FOTOGEL provides a fine dispersion of Barium Sulphate and may be mixed with hot or cold water, milk, farinaceous foods or saline laxatives. It is supplied in containers of 2 litres.